HMS-10™ Surround Loudspeaker
MPS-488 Power Supply

thinking sound Meyer Sound

Keep these important operating instructions.
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DECLARATION OF CONFORMITY ACCORDING TO ISO/IEC GUIDE 22 AND EN 45014

Manufacturer's Name: Meyer Sound Laboratories Inc.

Manufacturer's Address: 2832 San Pablo Avenue
Berkeley, CA 94702-2204, USA

Declares that the product:

Product Names: HMS-10 Cinema Surround Loudspeaker
MPS-488 Power Supply

Product Options: All

Conforms to the following Product Specifications:

Safety: EN 60065:2002

EMC: EN55103-1: 1997 emission[1]
EN55103-2: 1997 immunity[2]

This device also complies with EN 55103-1 & -2. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

Supplementary Information: The product herewith complies with the requirements of the Low Voltage Directive (LVD) 2006/95/EC and the EMC Directive 2004/108/EC.

Signature:

Ms. Margie Garza
Director of Quality
Meyer Sound Laboratories Inc.
Berkeley, California 94702 USA
Issued June 2, 2009

European Contact:
Your local Meyer Sound dealer or
Meyer Sound Germany, GmbH.

HMS-10 Operating Instructions, PN 05.198.011.01 A

Printed in the U.S.A.

SYMBOLS USED

These symbols indicate important safety or operating features in this booklet and on the chassis:

			
Dangerous voltages: risk of electric shock	Important operating instructions	Frame or chassis	Protective earth ground
Pour indiquer les risques résultant de tensions dangereuses	Pour indequer important instructions	Masse, châssis	Terre de protection
Warnung vor gefährlicher elektrischer Spannung	Wichtige Betriebsanweisung oder Gebrauchsanleitung	Rahmen oder Gehäuse	Masse Schutzleiter
Para indicar voltajes peligrosos	Instrucciones importantes de funcionamiento y/o manteniento	Armadura o chassis	Tierra proteccionista

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this loudspeaker near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with Meyer Sound's installation instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat.
9. Do not defeat the safety purpose of the grounding-type plug. A grounding type plug has two blades and a third grounding prong. The third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the loudspeaker. The AC mains plug or appliance coupler shall remain readily accessible for operation.
11. Only use attachments/accessories specified by Meyer Sound.
12. If applicable, use only with the caster rails or rigging specified by Meyer Sound, or sold with the loudspeaker. Handles are for carrying only.

    ⚠ **CAUTION:** Rigging should only be done by experienced professionals.

13. Unplug this loudspeaker during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the loudspeaker has been damaged in any way, such as when the power-supply cord or plug has been damaged; liquid has been spilled or objects have fallen into the loudspeaker; rain or moisture has entered the loudspeaker; the loudspeaker has been dropped; or when for undetermined reasons the loudspeaker does not operate normally.

SAFETY SUMMARY

English

- To reduce the risk of electric shock, disconnect the loudspeaker from the AC mains before installing audio cable. Reconnect the power cord only after making all signal connections.
- Connect the loudspeaker to a two-pole, three-wire grounding mains receptacle. The receptacle must be connected to a fuse or circuit breaker. Connection to any other type of receptacle poses a shock hazard and may violate local electrical codes.
- Do not install the loudspeaker in wet or humid locations without using weather protection equipment from Meyer Sound.
- Do not allow water or any foreign object to get inside the loudspeaker. Do not put objects containing liquid on or near the unit.
- To reduce the risk of overheating the loudspeaker, avoid exposing it to direct sunlight. Do not install the unit near heat-emitting appliances, such as a room heater or stove.
- This loudspeaker contains potentially hazardous voltages. Do not attempt to disassemble the unit. The unit contains no user-serviceable parts. Repairs should be performed only by factory-trained service personnel.

Français

- Pour réduire le risque d'électrocution, débrancher la prise principale de l'haut-parleur, avant d'installer le câble d'interface allant à l'audio. Ne rebrancher le bloc d'alimentation qu'après avoir effectué toutes les connections.
- Branchez l'haut-parleur dans une prise de courant à 3 dérivations (deux pôles et la terre). Cette prise doit être munie d'une protection adéquate (fusible ou coupe-circuit). Le branchement dans tout autre genre de prise pourrait entraîner un risque d'électrocution et peut constituer une infraction à la réglementation locale concernant les installations électriques.
- Ne pas installer l'haut-parleur dans un endroit où il y a de l'eau ou une humidité excessive.
- Ne pas laisser de l'eau ou tout objet pénétrer dans l'haut-parleur. Ne pas placer de r´cipients contenant un liquide sur cet appareil, ni à proximité de celui-ci.
- Pour éviter une surchauffe de l'haut-parleur, conserver-la à l'abri du soleil. Ne pas installer à proximité d'appareils dégageant de la chaleur tels que radiateurs ou appareils de chauffage.
- Ce haut-parleur contient des circuits haute tension présentant un danger. Ne jamais essayer de le démonter. Il n'y a aucun composant qui puisse être réparé par l'utilisateur. Toutes les réparations doivent être effectuées par du personnel qualifié et agréé par le constructeur.

Deutsch

- Um die Gefahr eines elektrischen Schlages auf ein Minimum zu reduzieren, den Lautsprecher vom Stromnetz trennen, bevor ggf. ein Audio-Schnittstellensignalkabel angeschlossen wird. Das Netzkabel erst nach Herstellung aller Signalverbindungen wieder einstecken.
- Der Lautsprecher an eine geerdete zweipolige Dreiphasen-Netzsteckdose anschließen. Die Steckdose muß mit einem geeigneten Abzweigschutz (Sicherung oder Leistungsschalter) verbunden sein. Der Anschluß der unterbrechungsfreien Stromversorgung an einen anderen Steckdosentyp kann zu Stromschlägen führen und gegen die örtlichen Vorschriften verstoßen.
- Der Lautsprecher nicht an einem Ort aufstellen, an dem sie mit Wasser oder übermäßig hoher Luftfeuchtigkeit in Berührung kommen könnte.
- Darauf achten, daß weder Wasser noch Fremdkörper in das Innere den Lautsprecher eindringen. Keine Objekte, die Flüssigkeit enthalten, auf oder neben die unterbrechungsfreie Stromversorgung stellen.
- Um ein Überhitzen dem Lautsprecher zu verhindern, das Gerät vor direkter Sonneneinstrahlung fernhalten und nicht in der Nähe von wärmeabstrahlenden
- Haushaltsgeräten (z.B. Heizgerät oder Herd) aufstellen.
- Im Inneren diesem Lautsprecher herrschen potentiell gefährliche Spannungen. Nicht versuchen, das Gerät zu öffnen. Es enthält keine vom Benutzer reparierbaren Teile. Reparaturen dürfen nur von ausgebildetem Kundenienstpersonal durchgeführt werden.

Español

- Para reducir el riesgo de descarga eléctrica, desconecte de la red de voltaje el altoparlante antes de instalar el cable de señal de audio. Vuelva a conectar la alimentacion de voltaje una vez efectuadas todas las interconexiones de señalizacion de audio.
- Conecte el altoparlante a un tomacorriente bipolar y trifilar con neutro de puesta a tierra. El tomacorriente debe estar conectado a la protección de derivación apropiada (ya sea un fusible o un disyuntor). La conexión a cualquier otro tipo de tomacorriente puede constituir peligro de descarga eléctrica y violar los códigos eléctricos locales.
- No instale el altoparlante en lugares donde haya agua o humedad excesiva.
- No deje que en el altoparlante entre agua ni ningún objeto extraño. No ponga objetos con líquidos encima de la unidad ni cerca de ella.
- Para reducir el riesgo de sobrecalentamiento, no exponga la unidad a los rayos directos del sol ni la instale cerca de artefactos que emiten calor, como estufas o cocinas.
- Este altoparlante contiene niveles de voltaje peligrosos en potencia. No intente desarmar la unidad, pues no contiene piezas que puedan ser reparadas por el usuario. Las reparaciones deben efectuarse únicamente por parte del personal de mantenimiento capacitado en la fábrica.

CONTENTS

CHAPTER 1: INTRODUCTION

HOW TO USE THIS MANUAL

Make sure to read these operating instructions in their entirety before configuring a loudspeaker system with HMS-10s. In particular, pay close attention to material related to safety issues.

As you read these operating instructions, you will encounter the following icons for notes, tips, and cautions:

NOTE: A note identifies an important or useful piece of information relating to the topic under discussion.

TIP: A tip offers a helpful tip relevant to the topic at hand.

CAUTION: A caution gives notice that an action may have serious consequences and could cause harm to equipment or personnel, or could cause delays or other problems.

Information and specifications are subject to change. Updates and supplementary information are available on the Meyer Sound® website:

http://www.meyersound.com

Meyer Sound Technical Support is available at:

- **Tel:** +1 510 486.1166
- **Fax:** +1 510 486.8356
- **Email:** techsupport@meyersound.com

THE HMS-10 SURROUND LOUDSPEAKER

Meyer Sound's HMS-10 is a full-range, two-way loudspeaker optimized for surround channels in theatres and re-recording stages. Designed to complement the Acheron™ line of screen channel loudspeakers, the self-powered HMS-10 maintains a wide dynamic range, full fidelity, and complete clarity during the most demanding of digital soundtracks. Boasting a wide frequency range of 55 Hz to 18 kHz and a maximum peak SPL of 126 dB at 1 meter with very low distortion, the HMS-10 ensures that the full intensity and nuance of cinema surround channels reach each listener without compromise.

HMS-10 Surround Loudspeaker (Shown without Grille)

The HMS-10's transducers include a 10-inch low-frequency long excursion cone driver and a 2-inch high-frequency compression driver on a symmetrical constant-directivity 80-degree horn that delivers exceptional coverage. The proprietary drivers — designed and manufactured at Meyer Sound's headquarters in Berkeley, California — are powered by two channels of onboard amplification that include an active crossover, driver protection, and frequency and phase response correction circuitry.

Balanced audio and DC power are received by the HMS-10 from a Phoenix™ 5-pin male connector on its top panel. Powering the unit from an external source eliminates the need for wiring conduits while still preserving the advantages of self-powered loudspeaker systems. The HMS-10's amplifier and signal-processing circuits are designed to store DC power and tolerate voltage drops, thereby accommodating light-gauge cables and lengthy cable runs.

HMS-10 loudspeaker systems require an MPS-488P external power supply. The single-space 19-inch rack unit receives balanced audio from its XLR female inputs and routes the audio, along with 48 V of DC power, to its channel outputs. The outputs — equipped with Phoenix 5-pin male connectors — can deliver DC power to up to four HMS-10 loudspeakers at cable lengths of up to 150 feet with just 1 dB of loss in peak SPL using 18 AWG wire. The use of composite multiconductor cables (such as Belden® 1502) allows a single cable to carry both DC power and balanced audio to the HMS-10. Longer cable runs are possible for moderate applications that don't drive the loudspeakers to maximum output, or for installations with heavier wire gauges.

MPS-488P Power Supply

NOTE: The MPS-488P was originally designed for use with the MM-4XP miniature loudspeaker. While the MPS-488P can power up to eight MM-4XPs, it can only power up to four HMS-10s (because of the HMS-10's additional current draw).

Meyer Sound's industry standard self-powered loudspeaker technology not only delivers unparalleled and consistent audio fidelity but also simplifies installation, whether designing a new room from scratch or adding surround channels to an existing setup.

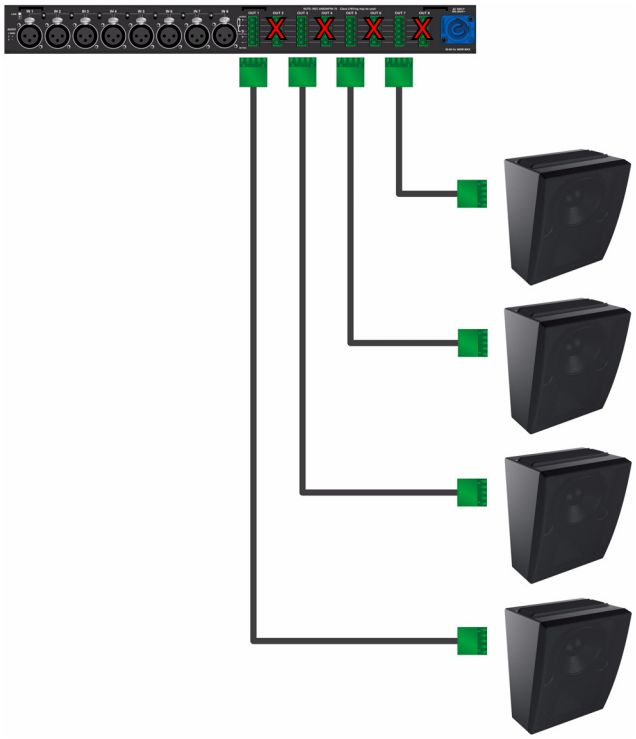
The HMS-10's compact size, textured finish, and black cloth grille blend smartly with any theater decor. The HMS-10 comes standard with a fixed bracket; an adjustable bracket is also available for wall mounting the HMS-10 with downtilt or uptilt.

HMS-10 with Fixed Mount Bracket

HMS-10 with Adjustable Mount Bracket

CHAPTER 2: THE MPS-488P POWER SUPPLY

The MPS-488P power supply delivers DC power and balanced audio to Meyer Sound loudspeakers that require a 48 V DC external power supply. The MPS-488P is a multichannel, switched-mode, regulated power supply that occupies one space in a standard 19-inch rack. The MPS-488P was originally designed for use with the MM-4XP miniature loudspeaker. While the MPS-488P can power up to eight MM-4XPs, it can only power up to four HMS-10s (because of the HMS-10's additional current draw).



MPS-488P with Four HMS-10s

NOTE: The MPS-488 power supply is available in two models: the MPS-488P, which is equipped with Phoenix 5-pin male output connectors (recommended for use with the HMS-10), and the MPS-488E, which is equipped with EN3 5-pin female output connectors.

THE MPS-488P FRONT PANEL

The MPS-488P front panel includes a power switch, LEDs for monitoring each loudspeaker channel, and fuses for each channel.

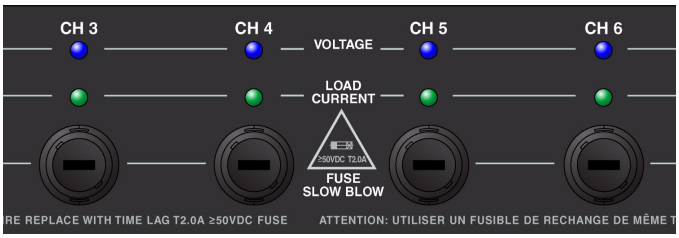
MPS-488P Power Supply Front Panel

AC Power

The MPS-488P is powered on and off with the AC Power switch.

Voltage and Load Current LEDs (1–8)

The Voltage and Load Current LEDs are useful for verifying whether each channel output has voltage and whether the connected loudspeakers are receiving DC power and audio.



MPS-488P Channel LEDs and Fuses

Voltage LEDs (1–8)

The blue Voltage LEDs indicate whether voltage is present for each channel output. These LEDs should be lit when the MPS-488P is powered on. If a channel is not lit, its fuse may need to be replaced. If a group of two Voltage LEDs is not lit (1–2, 3–4, 5–6 or 7–8), one of the four MPS-488P internal power supplies may have failed.

Load Current LEDs (1–8)

The green Load Current LEDs indicate whether a loudspeaker is connected to the channel and receiving power. As a channel's audio signal increases, its LED glows brighter. If an LED is not lit, check that the channel's Voltage LED is lit (the fuse is working) and verify the cable connection to the loudspeaker.

NOTE: Since HMS-10s should only be connected to channel outputs 1, 3, 5, and 7, only the Load Current LEDs for channels with connected loudspeaker will light up (unlike the Voltage LEDs, which will all light up).

Fuse Slow Blow (1–8)

Each loudspeaker channel is protected with its own fuse. A maximum of one HMS-10 can be connected to each of four output channels (1, 3, 5, and 7); connecting more than that could cause a channel's fuse to trip.

NOTE: When replacing fuses, make sure to use a 2-amp, 250-volt slow-blow fuse (T2A-250V). These fuses are available from Meyer Sound (PN 420.027).

THE MPS-488P REAR PANEL

The MPS-488P rear panel includes an AC connector, eight channel inputs for receiving source audio, eight channel outputs for delivering DC power and balanced audio, and seven Links switches for routing audio from inputs to outputs.

MPS-488P Power Supply Rear Panel

CAUTION: Because the MPS-488P can power a maximum of four HMS-10 loudspeakers, the HMS-10s should only be connected to channel outputs 1, 3, 5, and 7. Do not use the even-numbered channel outputs.

AC Input

The MPS-488P has a PowerCon twist-lock AC connector (line, neutral/line, earth). The connector can accept different power cord types for outlets used throughout the world. Make sure to use the correct power cord for the AC power in your area. The MPS-488P operates at an AC voltage range of 100–240 V at 50–60 Hz.

Channel Inputs

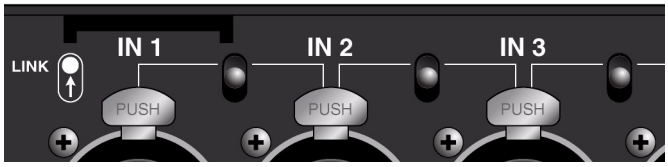
Up to eight channels of balanced audio are received from the MPS-488P's eight channel inputs. The inputs are equipped with XLR female connectors (pin 1, ground; pin 2, signal positive; pin 3, signal negative). Make sure to use standard balanced XLR cables with all three pins connected on both ends.

MPS-488P Channel Inputs

Channel inputs default to being routed to their corresponding channel outputs but can also be routed to adjacent outputs with the Link switches, though this affects their input impedance (see "Input Impedance for Linked Channel Inputs" on page 11).

Link Switches

Link switches determine how channel inputs are routed to channel outputs. When a channel input's Link switch is OFF (set to the down position), the input is only routed to its corresponding channel output: for example, channel input 1 routed to channel output 1. When a Link switch is ON (set to the up position), the input is routed to its corresponding channel output and the next adjacent channel output: for example, channel input 1 routed to channel outputs 1 and 2. If multiple, adjacent Link switches are enabled, the input is routed to each adjacent channel output: for example, channel input 1 routed to channel outputs 1, 2, and 3.



MPS-488P Audio Input

NOTE: Channel inputs are inactive when the Link switch for their preceding channel input is enabled. Connections should not be made to inactive channel inputs.

Routing Audio Inputs with the Link Switches

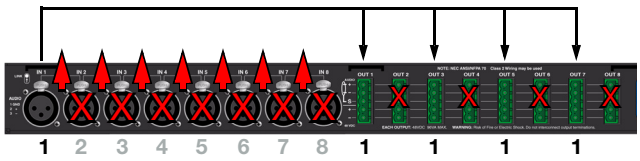
The following examples illustrate the most common routing applications for the MPS-488P with four HMS-10s. The MPS-488P can power a maximum of four HMS-10s.

Routing One Input to Four Outputs

To route one audio input to four channel outputs:

- Set all Link switches to ON.

Link 1	Link 2	Link 3	Link 4	Link 5	Link 6	Link 7
On	On	On	On	On	On	On

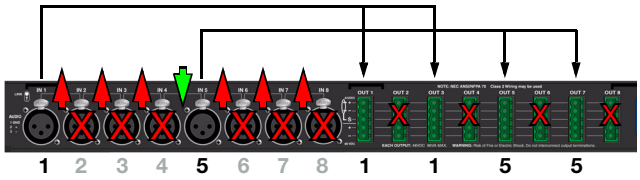


Routing Two Inputs to Two Outputs Each

To route two audio inputs to two channel outputs each:

1. Set Link switch 3 to OFF and all other switches to ON.

Link 1	Link 2	Link 3	Link 4	Link 5	Link 6	Link 7
On	On	On	Off	On	On	On

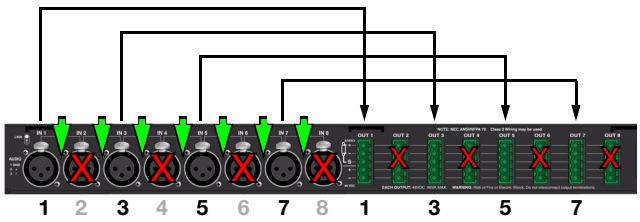


Routing Four Inputs to Four Separate Outputs

To route four audio inputs to four separate channel outputs:

- Set all Link switches to OFF.

Link 1	Link 2	Link 3	Link 4	Link 5	Link 6	Link 7
Off	Off	Off	Off	Off	Off	Off



Input Impedance for Linked Channel Inputs

When a Link switch is enabled, the channel input's unbuffered source signal is transmitted in parallel to each linked channel output. This causes the channel input's impedance (normally 10 kOhms for one HMS-10) to be reduced for each linked channel output. For example:

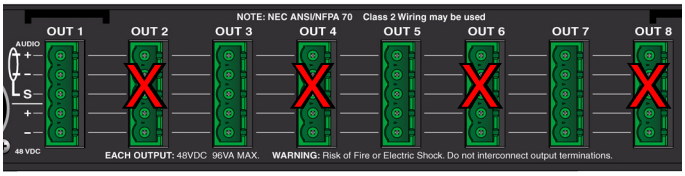
- 1 channel output, 10 kOhm input impedance
- 2 channel outputs, 5 kOhm input impedance
- 4 channel outputs, 2500 ohms input impedance

To avoid distortion when linking channel inputs, make sure the source device can drive the total load impedance of the linked HMS-10 loudspeakers. The source device must be capable of delivering a minimum of 16 dBV (6.3 V rms into 600 ohms) to yield the maximum peak SPL over the operating bandwidth of the loudspeaker.

NOTE: Most source devices are capable of driving loads no smaller than 10 times their output impedance. To drive four HMS-10s linked from a single channel input, the source device should have an output impedance of approximately 200 ohms or less.

Channel Outputs

The MPS-488P's eight channel outputs deliver DC power (48 V DC) and balanced audio to up to eight MM-4XPs or to up to four HMS-10s. The channel outputs use Phoenix 5-pin male connectors with three pins for balanced audio (positive, negative, and shield) and two for DC Power (positive and negative). These pins are clearly labeled on the MPS-488P rear panel. A single composite cable (such as Belden 1502) wired for both DC power and balanced audio can be used to connect to each HMS-10.



MPS-488P Channel Outputs

CAUTION: Because the MPS-488P can power a maximum of four HMS-10 loudspeakers, the HMS-10s should only be connected to channel outputs 1, 3, 5, and 7. Do not use the even-numbered channel outputs.

Each MPS-488P comes with Phoenix 5-pin female cable connectors for assembling HMS-10 loudspeaker cables. For information on HMS-10 cable requirements, see “HMS-10 Current Draw and Cable Requirements” on page 15. For information on cables and cable accessories available from Meyer Sound, see Appendix A, “HMS-10 Accessories.” For information on cable assembly, see Appendix B, “HMS-10 Cable Assembly.”

⚠ **CAUTION:** When wiring cable connections for the MPS-488P channel outputs, it is extremely important that each pin in the connector is wired correctly. Make sure the 48 V DC from the MPS-488P is wired directly (and only) to the 48 V DC pins on the HMS-10 connector, and that the polarity is observed (negative to negative, positive to positive) to avoid damage to the loudspeaker. In addition, make sure the audio pins are wired correctly; polarity reversals for audio signals will affect system performance.

NOTE: The MPS-488 power supply is available in two models: the MPS-488P, which is equipped with Phoenix 5-pin male output connectors (recommended for use with the HMS-10), and the MPS-488E, which is equipped with EN3 5-pin female output connectors.

MPS-488P CURRENT DRAW

The current draw for the MPS-488P and its connected loudspeakers is dynamic and fluctuates as operating levels change. Since different cables and circuit breakers heat up at varying rates, it is important to understand the following types of current ratings and how they affect circuit breaker and cable specifications.

- **Idle Current** — The maximum rms current during idle periods.
- **Maximum Long-Term Continuous Current** — The maximum rms current during a period of at least 10 seconds. The Maximum Long-Term Continuous Current is used to calculate temperature increases for cables, to ensure that cable sizes and gauges conform to electrical code standards. This current rating is also used as a rating for slow-reacting thermal breakers.
- **Burst Current** — The maximum rms current during a period of around one second. The Burst Current is used as a rating for magnetic breakers. It is also used for calculating the peak voltage drop in long AC cable runs according to the following formula:

  V pk (drop) = I pk x R (cable total)

- **Ultimate Short-Term Peak Current** — A rating for fast-reacting magnetic breakers.
- **Inrush Current** — The spike of initial current encountered when powering on.

You can use the following table as a guide for selecting cable gauges and circuit breaker ratings for the system’s operating voltage.

Current Draw for MPS-488P with Four HMS-10s

Current Draw (Four HMS-10s)	115 V AC	230 V AC	100 V AC
Idle Current	1.16 A rms	1.00 A rms	1.26 A rms
Maximum Long-Term Continuous Current	3.92 A rms	2.11 A rms	4.48 A rms
Burst Current	9.84 A rms	5.40 A rms	10.76 A rms
Ultimate Short-Term Peak Current	11.20 A peak	6.60 A peak	12.20 A peak
Inrush Current	15.20 A peak	9.36 A peak	17.60 A peak

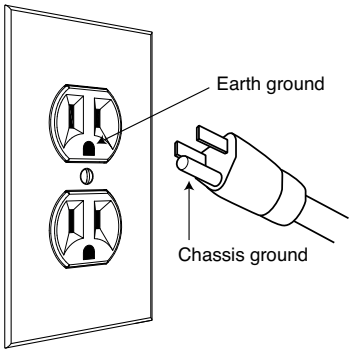
The minimum electrical service amperage required by an MPS-488P is the sum of the Maximum Long-Term Continuous Current for all HMS-10s connected to the MPS-488P. An additional 30 percent above the minimum amperage is recommended to prevent peak voltage drops at the service entry.

NOTE: For best performance, the AC cable voltage drop should not exceed 10 V, or 10 percent at 115 V and 5 percent at 230 V. Make sure that even with AC voltage drops that the AC voltage always remains within the operating window.

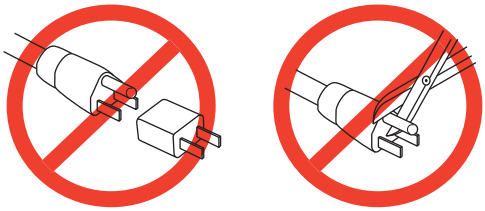
SAFETY ISSUES

Pay close attention to these important electrical and safety issues.

- The MPS-488P requires a grounded outlet.



- Do not use a ground-lifting adapter or cut the AC cable ground pin.



- Keep all liquids away from the MPS-488P to avoid hazards from electrical shock.
- Do not operate the unit if the power cables are frayed or broken.

CHAPTER 3: THE HMS-10 LOUDSPEAKER

THE HMS-10 CONNECTOR

The HMS-10 receives DC power and balanced audio from a Phoenix 5-pin male connector on its top panel. The connector's five pins include two for DC power (negative and positive) and three for balanced audio (shield, negative, and positive). These pins are clearly labeled on the HMS-10 top panel. The connector accepts conductors up to 12 AWG (American Wire Gauge) or 2.5 mm^2. To function properly, the HMS-10 requires 48 V of DC power.

HMS-10 Connector

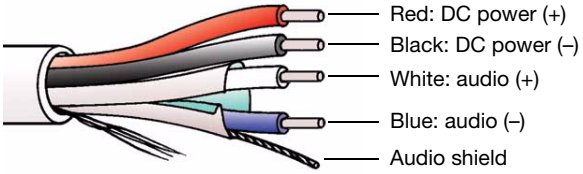
A single composite cable (such as Belden 1502) wired for both DC power and balanced audio can connect HMS-10 loudspeakers to the MPS-488P's channel outputs.

Each HMS-10 loudspeaker comes with one Phoenix 5-pin female cable connector for making loudspeaker cables. For information on HMS-10 cable requirements, see "HMS-10 Current Draw and Cable Requirements" on page 15. For information on cables and cable accessories available from Meyer Sound, see Appendix A, "HMS-10 Accessories." For information on cable assembly, see Appendix B, "HMS-10 Cable Assembly."

CAUTION: When wiring HMS-10 loudspeaker cables, make sure each pin in the connector is wired correctly to avoid damage to the loudspeaker and polarity reversal, which will affect system performance.

Wiring HMS-10 Loudspeaker Cables with Belden 1502 Cable

When wiring HMS-10 loudspeaker cables with Belden 1502 cable, use the conventions in Table 1. The red and black wires in the Belden 1502 cable have a thicker gauge than the other three wires and should be used for DC power. The blue, white, and shield wires are shielded together and should be used for audio.



Belden 1502 Composite Cable

Table 1: Wiring HMS-10 Loudspeaker Cables with Belden 1502

Wire	Gauge	Gauge
Red	DC power, positive (+)	18 AWG
Black	DC power, negative (–)	18 AWG
White	Balanced audio, positive (+)	22 AWG
Blue	Balanced audio, negative (–)	22 AWG
Shield	Balanced audio, shield	24 AWG

Both ends of the HMS-10 loudspeaker cable should be wired so that the pins in the HMS-10 connector align with those in the MPS-488P channel output connector (see "Channel Inputs" on page 10).

HMS-10 Current Draw and Cable Requirements

Each HMS-10 loudspeaker draws a maximum current of 3.31 A rms and 3.45 A peak from the 48 V DC output of the MPS-488P. The current draw for the HMS-10 is dynamic and fluctuates as operating levels change. The cabling between the HMS-10 and the MPS-488P adds resistance and hence causes a voltage drop at the loudspeaker. Because lower voltages compromise peak SPL, and in some cases frequency response, cable resistance should be minimized.

NOTE: When connecting an HMS-10 to an MPS-488P channel output, the total cable resistance should not exceed 2 ohms.

Cable Lengths and Cable Gauges for HMS-10s

When connecting an HMS-10 to an MPS-488P channel output, you can use cable lengths up to 150 feet with only 1 dB of peak SPL loss using 18 AWG wire. Longer cable lengths are possible with heavier wire gauges (see Table 2 and Table 3).

Table 2: HMS-10 Loudspeaker Cable Lengths (AWG)

Cable Gauge	Resistance (Ω/ft)	Approximate Max. Length
12 AWG	0.0016	600 ft
14 AWG	0.00253	375 ft
16 AWG	0.00402	237 ft
18 AWG	0.00636	150 ft
20 AWG	0.01008	87 ft

Table 3: HMS-10 Loudspeaker Cable Lengths (European)

Cable Gauge	Resistance (Ω/m)	Approximate Max. Length
2.50 mm^2	0.0052	157 m
1.50 mm^2	0.01076	87 m
1.00 mm^2	0.02087	45 m
0.75 mm^2	0.03307	27 m

The maximum cable length for an HMS-10 can be calculated with the following formula:

maximum length = 2 ohms / 2 * cable resistance

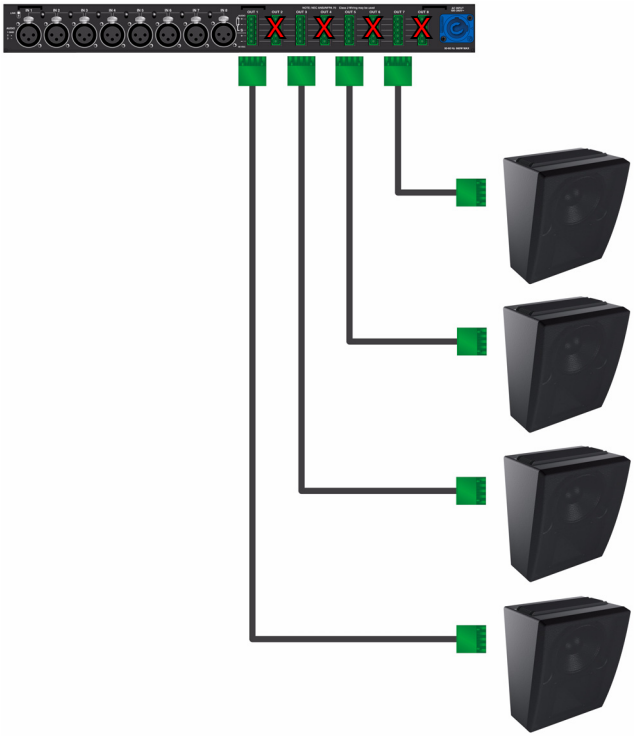
For example, the maximum length of an 18 AWG cable with a resistance of 0.00636 is 157.2 feet (2 / 2 * 0.00636).

NOTE: For long cable runs, use a large cable gauge for DC power and a separate balanced audio cable for audio.

CONNECTING HMS-10 LOUDSPEAKERS TO THE MPS-488P

To connect HMS-10 loudspeakers to the MPS-488P:

1. Power off the MPS-488P.
2. Connect audio sources (from a mixer or processor) to the MPS-488P channel inputs. Use balanced XLR cables.
3. Use the MPS-488P Link switches to route channel inputs to the desired channel outputs. For more information, see “Link Switches” on page 10.
4. Connect up to four HMS-10 loudspeakers to the MPS-488P channel outputs. Connect only to channel outputs 1, 3, 5, and 7. Use a composite cable (such as Belden 1502) outfitted with Phoenix connectors and wired for both DC power and balanced audio.



TIP: You can also use two separate cables for HMS-10 loudspeaker connections: 2-conductor cable for DC power and 3-conductor cable for balanced audio, both attached to a single Phoenix connector on each cable end.

CAUTION: Make sure the HMS-10 loudspeaker cables are wired correctly. For details on assembling loudspeaker cables, see Appendix B, “HMS-10 Cable Assembly.”

5. Power on the MPS-488P and monitor the LEDs on the front panel to verify connections (for more information, see “Voltage and Load Current LEDs (1–8)” on page 9).
6. Enable output from the audio sources (from the mixer or processor) connected to the MPS-488P.

CHAPTER 4: MOUNTING THE HMS-10

The HMS-10 comes standard with a fixed bracket; an adjustable bracket is also available for wall mounting the HMS-10 with downtilt or uptilt. This chapter describes how to mount the HMS-10 with these two mounting options.

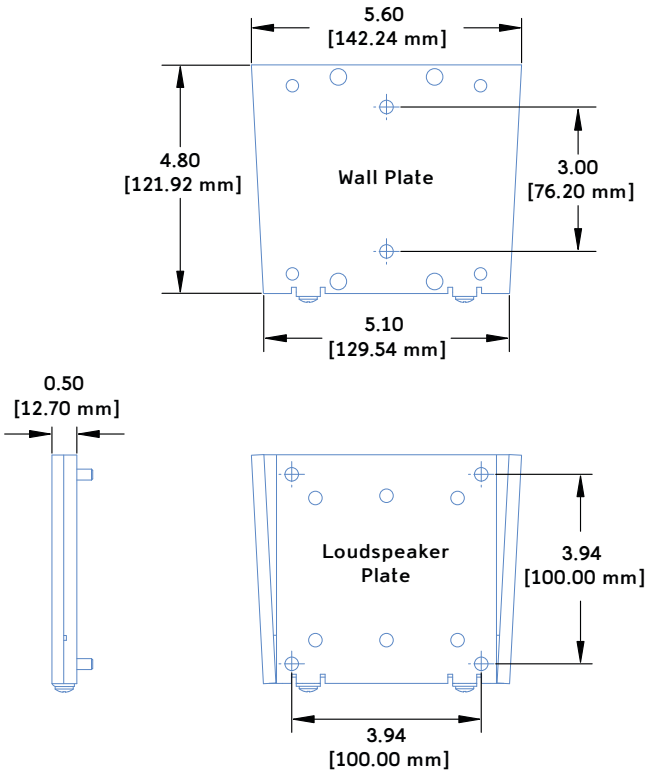
IMPORTANT SAFETY CONSIDERATIONS

When installing Meyer Sound loudspeakers, the following precautions should always be observed:

- All Meyer Sound products must be used in accordance with local, state, federal, and industry regulations. It is the owner's and user's responsibility to evaluate the reliability of any rigging or mounting method for their application. Rigging should only be carried out by experienced professionals.
- Use mounting and rigging hardware that has been rated to meet or exceed the weight being hung.
- Make sure to attach mounting hardware to the building's structural components (studs or joists), and not just to the wall surface. Verify that the building's structure and the anchors used for the installation will safely support the total weight of the mounted loudspeakers.
- Use mounting hardware appropriate for the surface where the loudspeaker will be installed.
- Make sure bolts are tightened securely. Meyer Sound recommends using Loctite® on bolt threads and safety cables.
- Inspect mounting and rigging hardware regularly. Immediately replace any worn or damaged components.

MOUNTING THE HMS-10 WITH THE FIXED MOUNT BRACKET

The HMS-10 can be mounted with a fixed mount bracket at a fixed angle of 0 degrees. The low profile bracket allows the HMS-10 to be mounted less than 0.6" (15 mm) from the wall.

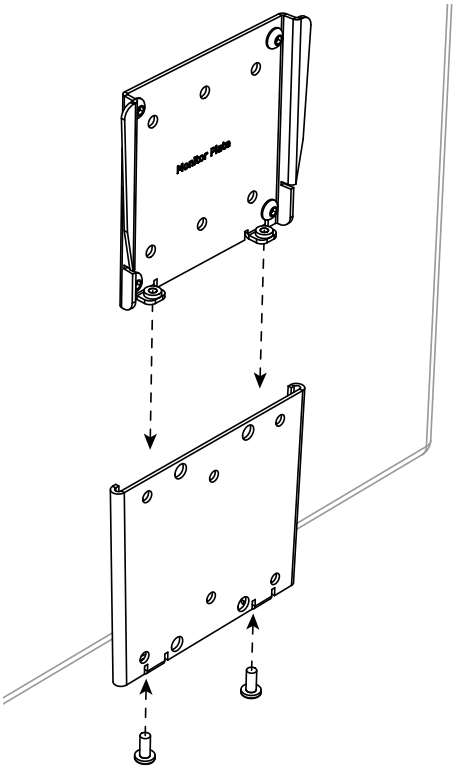


Fixed Bracket (OmniMount 17FM-F)

NOTE: When ordering the HMS-10 with the fixed mount bracket, the bracket is factory installed and already attached to the loudspeaker.

To mount the HMS-10 with the fixed mount bracket:

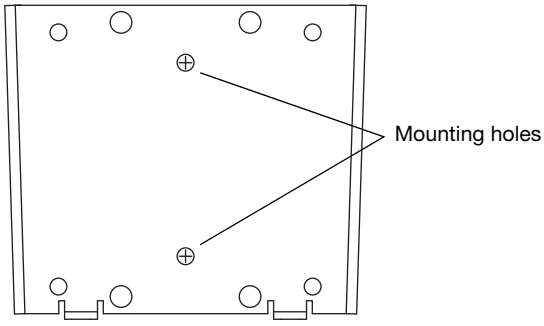
1. Disassemble the fixed bracket by removing the two bottom screws. Separate the wall plate from the loudspeaker plate (labeled “Monitor”). Leave the loudspeaker plate attached to the HMS-10.



2. Choose one of the following mounting options:

■ To mount the HMS-10 on a wall with a wood stud:

– Locate the wall stud and mark two holes on the wall using the wall plate’s center holes as a guide.



– Drill two 1/8” pilot holes, 2.0 inches deep, at the marked locations.

– Secure the wall plate to the wall with the two wood screws.

■ To mount the HMS-10 on a concrete wall:

– Mark two mounting holes on the wall using the wall plate’s center holes as a guide.

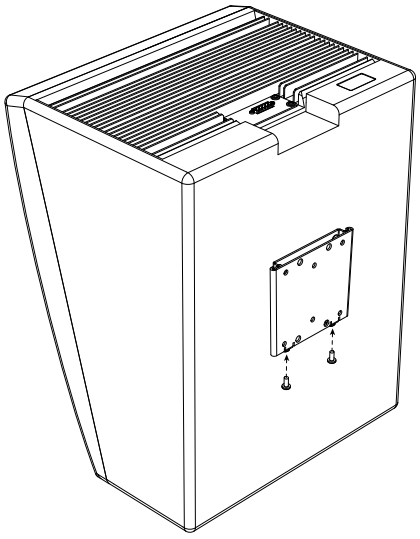
– Drill two 5/16” pilot holes, 2.5 inches deep, at the marked locations.

– Install the wall anchors in the pilot holes so they are flush with the wall surface.

– Secure the wall plate to the wall with the wood screws.

3. Hang the HMS-10 on the wall by carefully sliding the loudspeaker plate (attached to the HMS-10) down into the wall plate’s grooves.

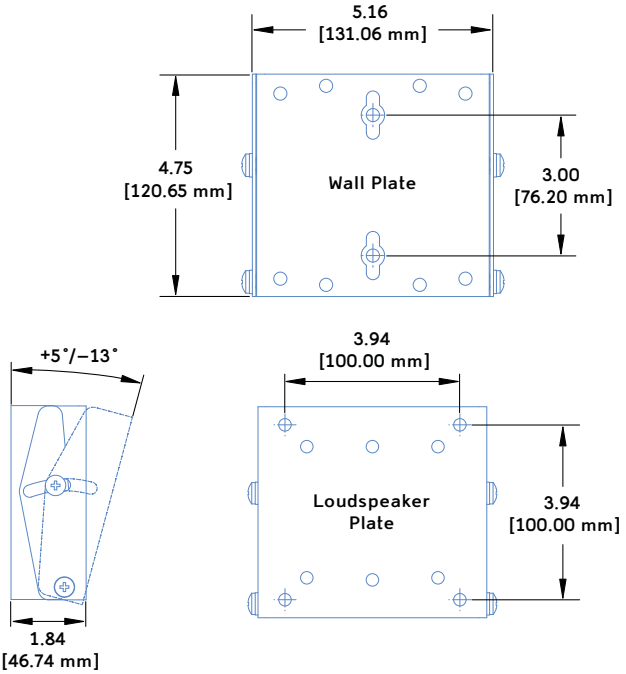
4. For additional stability, secure the loudspeaker plate to the wall plate with the two bottoms screws previously removed.



NOTE: When mounting the HMS-10 in a soffit, allow at least 3 inches above the unit for the mounting bracket to slide into place. The extra space also provides the necessary ventilation for the HMS-10’s amplifier and heat sink.

MOUNTING THE HMS-10 WITH THE ADJUSTABLE MOUNT BRACKET

The HMS-10 can be wall mounted with the adjustable mount bracket at downtilt angles up to 13 degrees and uptilt angles up to 5 degrees (uptilt).

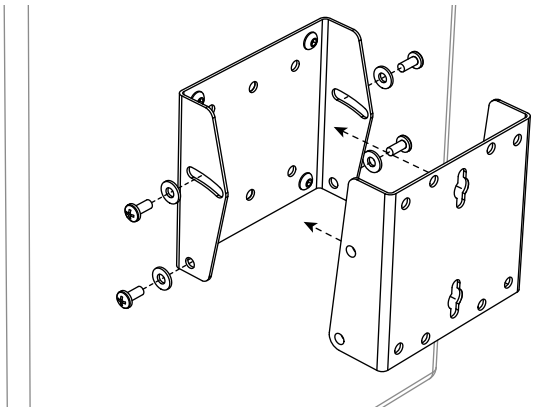


Adjustable Bracket (OmniMount 17FM-T)

NOTE: When ordering the HMS-10 with the adjustable mount bracket, the bracket is factory installed and already attached to the loudspeaker.

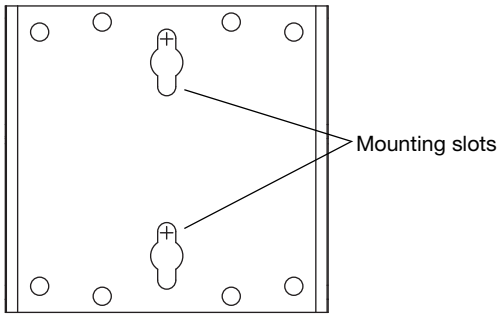
To mount the HMS-10 with the adjustable mount bracket:

1. Disassemble the adjustable bracket by removing the four side screws and washers. Separate the wall plate from the loudspeaker plate (labeled “Monitor”). Leave the loudspeaker plate attached to the HMS-10.

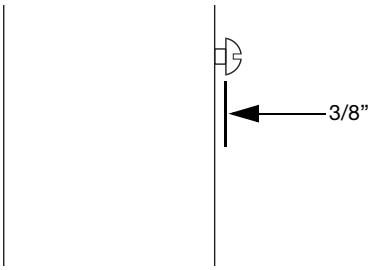


2. Choose one of the following mounting options:

- To mount the HMS-10 on a wall with a wood stud:
  - Locate the stud and mark two mounting holes on the wall using the wall plate’s center mounting slots as a guide.



  - Drill two 1/8” pilot holes, 2.0 inches deep, at the marked locations.
  - Install the wood screws in the pilot holes. Leave the screws extended approximately 3/8” from the wall surface.

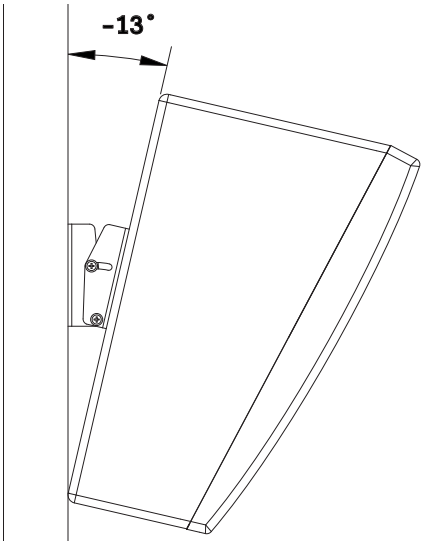


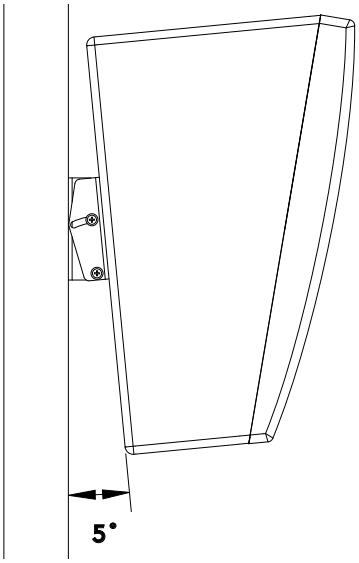
- To mount the HMS-10 on a concrete wall:
  - Mark two mounting holes on the wall using the wall plate’s center mounting slots as a guide.
  - Drill two 5/16” pilot holes, 2.5 inches deep, at the marked locations.
  - Install the wall anchors in the pilot holes so they are flush with the wall surface.
  - Install the wood screws in the wall anchors. Leave the screws extended approximately 3/8” from the wall surface.

3. Reattach the wall plate to the loudspeaker plate with the previously removed four washers and screws. The washers should be placed on the outside of the loudspeaker plate.
4. Hang the mounting bracket, with the HMS-10 attached, on the wall screws.

5. Adjust the tilt of the HMS-10 from –13 degrees (downtilt) to +5 degrees (uptilt). Tighten the four side screws to secure the HMS-10.

NOTE: Make sure the four side screws are completely tightened to ensure that the HMS-10 won't move from its desired position.



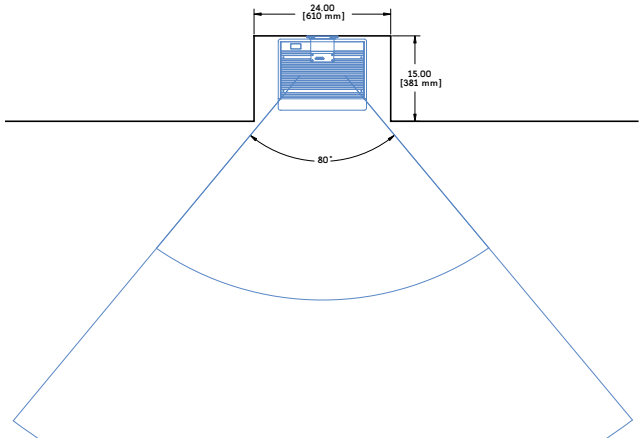


TIP: If more than 5 degrees of uptilt are needed for the HMS-10, the adjustable bracket can be oriented upside down (mount the wall plate on the wall upside down and remove and reattach the loudspeaker plate to the HMS-10 also upside down). This orientation allows uptilt angles up to 13 degrees.

NOTE: When mounting the HMS-10 in a soffit, allow at least 3 inches above the unit to provide the necessary ventilation for its amplifier and heat sink.

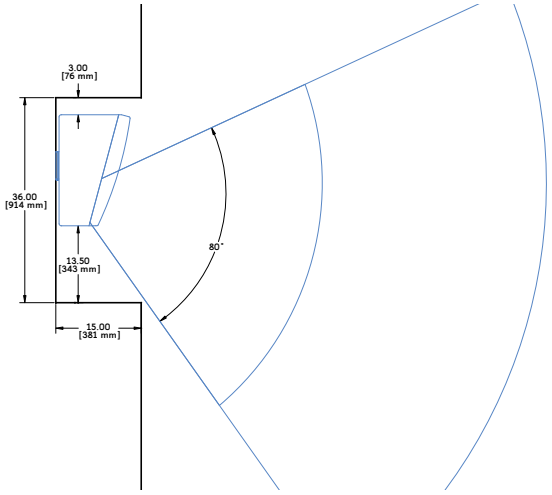
MOUNTING HMS-10S IN SOFFITS

When mounting the HMS-10 in a soffit, use a soffit that measures at least 24" wide by 36" high by 15" deep (610 mm x 914 mm x 381 mm). This ensures that the loudspeaker's full 80-degree horizontal by 80-degree vertical horn coverage will reach the listener. If the soffit is deeper than 15", or the HMS-10 is angled down, the overall height of the soffit should be increased to accommodate the horn's vertical coverage.



HMS-10 in Soffit, Top View

In addition, make sure to allow at least 3 inches above the HMS-10 for the mounting bracket to slide into place. The extra space also provides the necessary ventilation for the unit's amplifier and heat sink.



HMS-10 in Soffit, Side View

APPENDIX A: HMS-10 ACCESSORIES

The following HMS-10 accessories are available from Meyer Sound.

HMS-10 Accessories

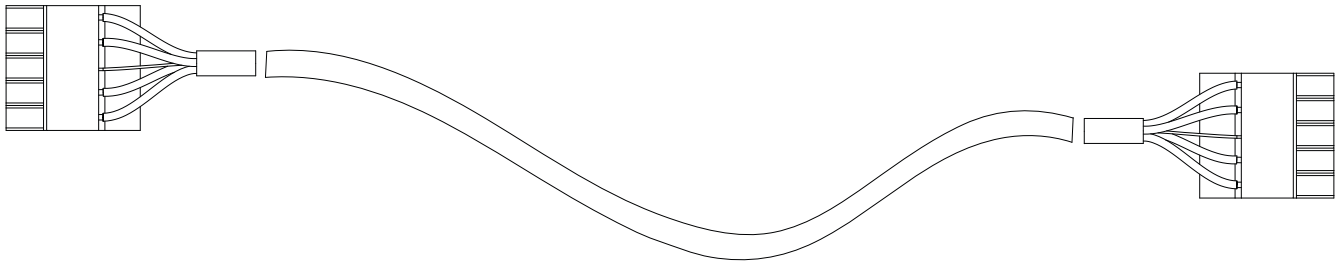
Part Number	Accessory	Notes
09.183.001.01	MPS-488P external power supply with U.S. power cord	Powers up to four HMS-10s; connect only to channel outputs 1, 3, 5, and 7
09.183.001.02	MPS-488P external power supply with CE power cord	Powers up to four HMS-10s; connect only to channel outputs 1, 3, 5, and 7
420.027	MPS-488 Fuse Replacement	2-amp, 250-volt slow-blow fuse (T2A-250V)
484.065	Phoenix 5-pin female cable mount connector	Connects to MPS-488P channel output connectors and HMS-10 loudspeaker connectors
524.014	1502R (regular) bulk cable	500-ft spool, no connectors
524.015	1502P (plenum) bulk cable	500-ft spool, no connectors

NOTE: Belden 1502 is a composite cable comprised of two 18 AWG wires for DC power, two 22 AWG wires for balanced audio, and one 24 AWG wire for the audio shield. This single cable can deliver both DC power and balanced audio to loudspeakers at cable runs of up to 150 feet with only 1 dB of loss in peak SPL. Longer cable runs are possible with heavier gauges for DC power and separate cables for balanced audio. For more information, see “HMS-10 Current Draw and Cable Requirements” on page 15.

APPENDIX B: HMS-10 CABLE ASSEMBLY

ASSEMBLING PHOENIX-TO-PHOENIX LOUDSPEAKER CABLES

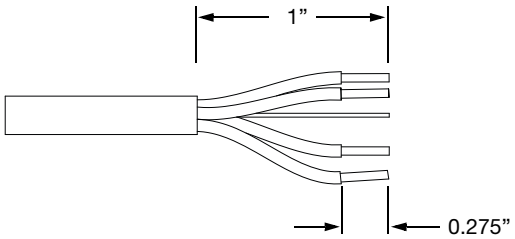
To connect the HMS-10 loudspeaker directly to the MPS-488P power supply, you need a Phoenix 5-pin female to Phoenix 5-pin female cable. The following procedure documents how to assemble this cable.



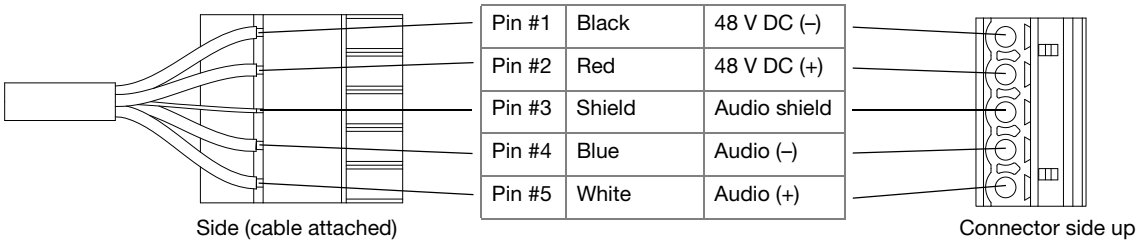
Assembled Phoenix-to-Phoenix Cable

To assemble a Phoenix-to-Phoenix cable:

1. If the cable has not yet been stripped, strip one end of the cable. Strip the outer shielding by 1” and then strip the black, red, blue, and white wires by .275”.



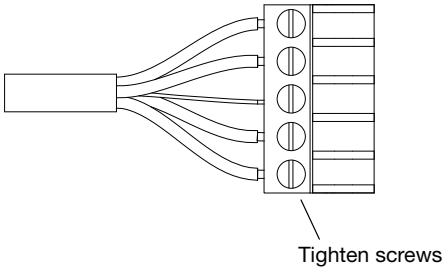
2. Insert the five exposed conductors, from one end of the cable, into the five cable holes in one of the Phoenix connectors. Use the following wiring scheme.



Pin #1	Black	48 V DC (–)
Pin #2	Red	48 V DC (+)
Pin #3	Shield	Audio shield
Pin #4	Blue	Audio (–)
Pin #5	White	Audio (+)

Phoenix 5-Pin Female Cable Mount Connector

3. Secure the conductors by tightening the five screws in the Phoenix connector.



4. Repeat the previous steps and attach the other end of the cable to the other Phoenix connector.
5. Verify the wiring polarity is correct for both connectors.

APPENDIX C: HMS-10 SPECIFICATIONS

HMS-10 Specifications

ACOUSTICAL	
Operating Frequency Range	55 Hz – 18 kHz **Note:** Recommended maximum operating frequency range. Response depends on loading conditions and room acoustics.
Frequency Response	58 Hz – 17.5 kHz ±4 dB **Note:** Measured free-field with pink noise at 1 meter, 1/3rd octave resolution.
Maximum Peak SPL	126 dB **Note:** Measured free-field with music, referred to 1 meter.
Dynamic Range	100 dB **Note:** Taken from peak SPL, referred to A-wtd noise floor.
Phase Response	290 Hz – 18 kHz ±45°
Coverage	80° symmetrical
Acoustical Crossover	2.5 kHz **Note:** At this frequency, the transducers produce equal sound pressure levels.
TRANSDUCERS	
Low Frequency	One 10" low-frequency long excursion cone driver
High Frequency	One 2" high-frequency diaphragm compression driver
CONNECTOR	
Audio/Power Connector	Single Phoenix 5-pin male (3 pins for balanced audio, 2 pins for DC power)
Power Wiring	Pin 1: 48 V DC – Pin 2: 48 V DC +
Audio Wiring	Pin 3: Chassis/earth through 220 kΩ, 1000 pF, 15 V clamp network to provide virtual ground lift at audio frequencies Pin 4: Signal – Pin 5: Signal +
AUDIO INPUT	
Type	Differential, electronically balanced
Maximum Common Mode Range	±15 V DC, clamped to earth for voltage transient protection
Input Impedance	10 kΩ differential between pins 4 (–) and 5 (+)
DC Blocking	Differential DC blocking on input up to the maximum common mode voltage
CMRR	>50 dB, typically 80 dB (50 Hz – 500 Hz)
RF Filter	Common mode: 425 kHz Differential mode: 142 kHz
TIM Filter	<80 kHz, integral to signal processing
Nominal Input Sensitivity	6.0 dBV (2.0 V rms, 2.8 V peak) continuous average is typically the onset of limiting for noise and music
Input Level	Audio source must be capable of producing +16 dBV (6.3 V rms, 9.0 V peak) into 600 Ω to produce the maximum peak SPL over the operating bandwidth of the loudspeaker
AMPLIFIER	
Amplifier Type	Two-channel complementary MOSFET output stages (class AB/Bridged)

HMS-10 Specifications

Output Power	300 W total **Note:** Wattage rating based on the maximum unclipped burst sine-wave rms voltage the amplifier will produce into the nominal load impedance.
THD, IM TIM	<.02%
Load Capacity	4 Ω low channel, 12 Ω high channel
Cooling	Convection
DC POWER	
Voltage Requirement	48 V DC
Current Draw	**Note:** At 48 V DC.
Idle Current	0.35 A rms
Maximum Long-Term Continuous Current	2.03 A rms
Burst Current	3.31 A rms
Ultimate Short-Term Peak Current	3.45 A peak
Inrush Current	4.55 A peak
PHYSICAL	
Enclosure	Multi-ply hardwood
Finish	Black textured
Protective Grille	Acoustically transparent, black cloth-covered frame
Mounting	Fixed bracket or optional adjustable bracket with 13° downtilt and 5° uptilt
Dimensions	15.5” W x 19.5” H x 12.5” D without mounting bracket (394 mm x 495 mm x 317 mm)
Weight	29.1 lbs (13.2 kg) with mounting bracket
ENVIRONMENTAL	
Operating Temperature	0° C to +45° C
Non Operating Temperature	<–40° C or >+75° C
Humidity	To 95% at 35° C
Operating Altitude	To 4600 m (15,000 ft)
Non operating Altitude	To 95% at 35° C
Shock	30 g 11 msec half-sine on each of 6 sides
Vibration	10 Hz – 55 Hz (0.010 m peak-to-peak excursion)

HMS-10 COMPLIANCE

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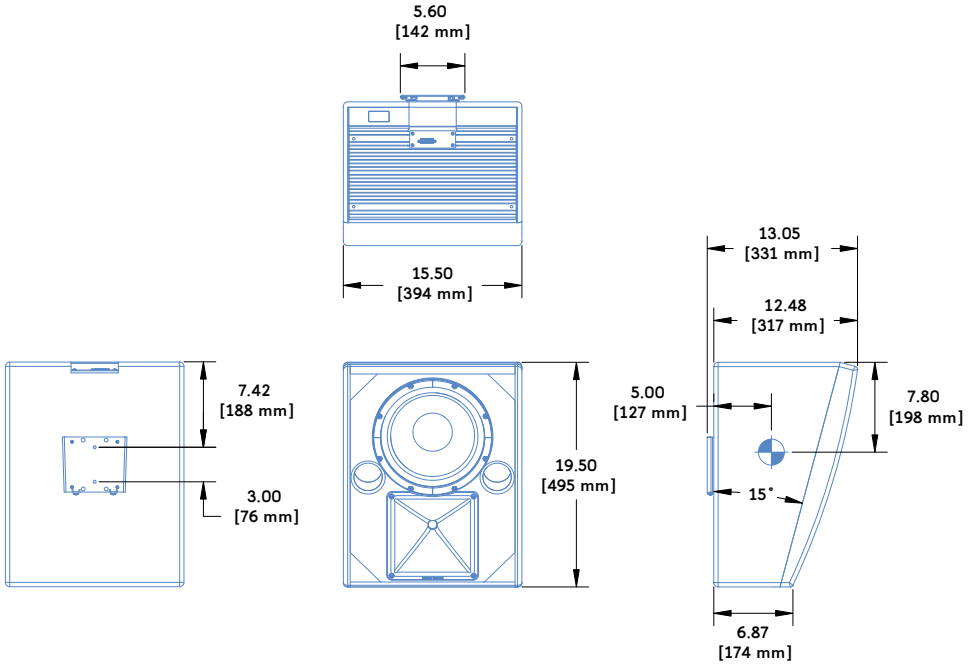
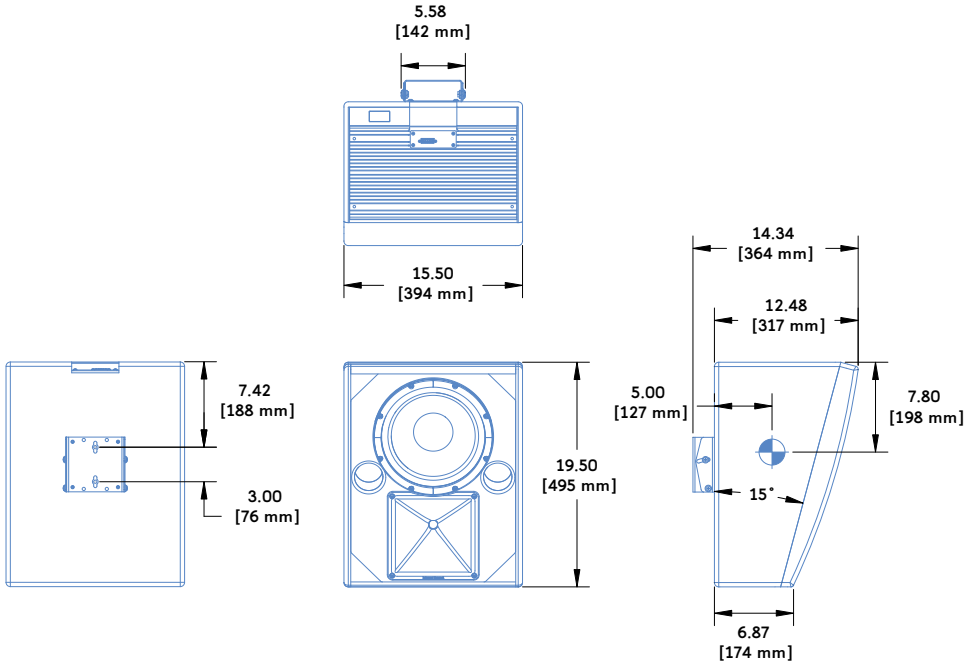
HMS-10 DIMENSIONS



HMS-10 Dimensions with Fixed Bracket (OmniMount 17FM-F)



HMS-10 Dimensions with Adjustable Bracket (OmniMount 17FM-T)

APPENDIX D: MPS-488 SPECIFICATIONS

NOTE: The MPS-488 was originally designed for use with the MM-4XP miniature loudspeaker. While the MPS-488 can power up to eight MM-4XPs, it can only power up to four HMS-10s (because of the HMS-10's additional current draw).

MPS-488 Specifications

FRONT PANEL	
LEDs	Eight LEDs to indicate output voltage Eight LEDs to indicate load current
REAR PANEL	
Audio Inputs	Eight channels of XLR female connectors with Link switches to route to outputs
Outputs	MPS-488P model includes eight channels of Phoenix 5-pin male connectors (three pins for balanced audio, two pins for DC power); MPS-488E model available with EN3 5-pin female connectors **Note:** Because the MPS-488 can power a maximum of four HMS-10 loudspeakers, the HMS-10s should only be connected to channel outputs 1, 3, 5, and 7. Do not use the even-numbered channel outputs.
Output Voltage	Eight channels of 48 V DC (2.0 A, fuse protected)
AC POWER	
AC Connector	PowerCon
Voltage Selection	Automatic
Safety Agency Rated Operating Voltage	100–240 V AC; 50/60 Hz
Turn On/Turn Off Points	90–264 V AC; 50/60 Hz **Note:** No automatic turn-off voltages. Voltages above 265 V AC are fuse protected but may cause permanent damage to the power supply. Voltages below 90 V AC may result in intermittent operation.
Current Draw	**Note:** For four HMS-10 loudspeakers (connected to channels 1, 3, 5, and 7).
Idle Current	1.16 A rms (115 V AC); 1.00 A rms (230 V AC); 1.26 A rms (100 V AC)
Maximum Long-Term Continuous Current	3.92 A rms (115 V AC); 2.11 A rms (230 V AC); 4.48 A rms (100 V AC)
Burst Current	9.84 A rms (115 V AC); 5.40 A rms (230 V AC); 10.76 A rms (100 V AC)
Ultimate Short-Term Peak Current	11.20 A peak (115 V AC); 6.60 A peak (230 V AC); 12.20 A peak (100 V AC)
Inrush Current	15.20 A peak (115 V AC); 9.36 A peak (230 V AC); 17.60 A peak (100 V AC)
PHYSICAL	
Dimensions	1RU high 19.00" W x 1.73" H x 13.57" D (482.60 mm x 43.94 mm x 348.78 mm)
Weight	15.5 lbs (6.6 kg)
ENVIRONMENTAL	
Operating Temperature	0° C to +45° C
Non operating Temperature	<–40° C or >+75° C
Humidity	To 95% at 35° C
Operating Altitude	To 4600 m (15,000 ft)

MPS-488 Specifications

Non Operating Altitude	To 95% at 35° C
Shock	30 g 11 msec half-sine on each of 6 sides
Vibration	10 Hz – 55 Hz (0.010 m peak-to-peak excursion)

MPS-488 COMPLIANCE

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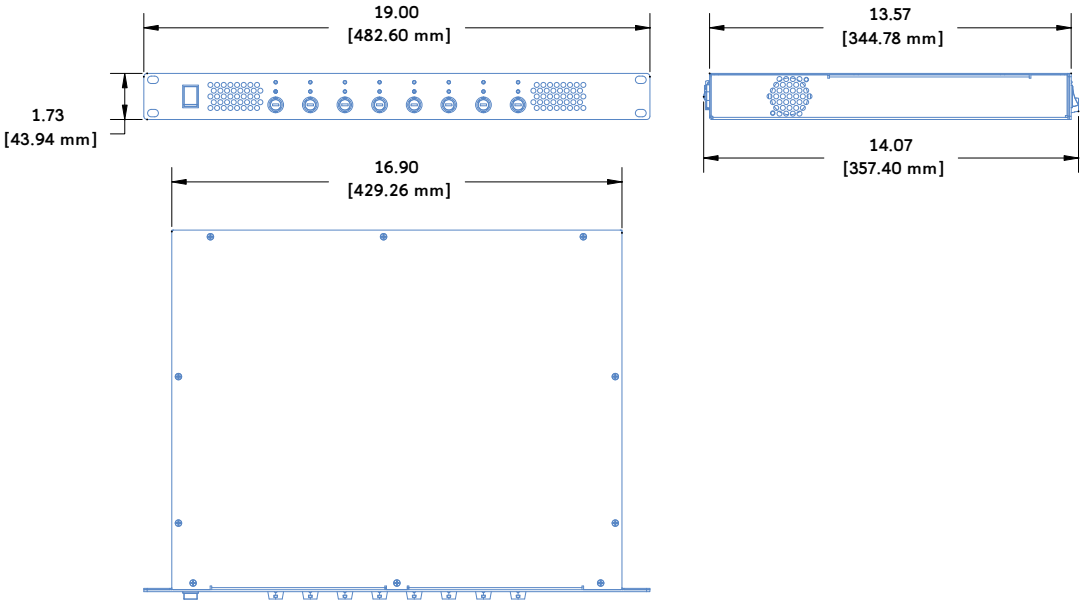
MPS-488 DIMENSIONS



MPS-488 Dimensions

thinking sound

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HMS-10 Operating Instructions, PN 05.198.011.01 A